METEOROLOGICAL INVESTIGATIONS IN GREENLAND DURING 1930–31

By LEONARD R. SCHNEIDER

Meteorologists in charge of preparations for the 1932–33 year of Arctic study will have to extend themselves if they are to equal the interest and activity being shown in Greenland at the close of the summer of 1930 where to-day there are four expeditions already at work on, or in the vicinity of, the great inland ice cap. In all, five nations are represented. In the following paragraphs something of the purposes of, and difficulties encountered by, the expeditions will be summarized.

The German expedition led by Dr. Alfred Wegener has as its goal the establishment of three meteorological stations in latitude 71°. One station, on the western slope of the inland ice, was early set in operation, and during the last weeks of summer all energies were concentrated upon the huge task of getting equipment from the coast eastward to an elevation of approximately 10,000 feet and at a point 250 miles into the interior. One hundred dogs, Icelandic ponies, and newly devised propeller-driven motor sledges were used to transport the freight. Dr. Walter Kopp is in charge of the station located on the ice cap at its eastern margin; Doctor Georgii is taking over the work at the remote interior station; and though Doctors Weiken, Lowee, and Wegener are in the region, their exact field of operation is unknown to the writer.

Using Sir Ernest Shackleton's ship, *Quest*, Col. H. George Watkins, director of the British Arctic Air Route Expedition, has spent the past summer at work along the eastern coast of southern Greenland. The party, at Angmagsalik on the east coast, in latitude 66°, set up its base on Sermilikfjord, and immediately the expedition began its ambitious program. Quoting from the New York Times, we read:

> The airplane will start on the first flight north, up the coast from the base for about 100 miles, taking vertical and oblique photographs of the coast line. When it comes back it will be put on board the *Quest*, and the *Quest* will move up that 100 miles, and the airplane will repeat the process for the next 100 miles. In this way the 320 miles between Angmagsalik and Kangerdlugsuak Fjord, which may be a very large and deep fjord, will be surveyed from the air.

In the meantime Scott, Rymill, Lindsay, Bingham, and Chief Meteorologist Riley, will establish a central ice-cap station, where as in this case of Wegener's, the meteorological observations will be continued for one year. It is further proposed—

> About the end of August or the beginning of September, Scott and I (Watkins) and two others will start on a journey by dog sledge down the edge of the ice cap to the south. We shall travel as near to the coast as the crevasses on the edge of the ice allow. That is to say, our route will lie through the nunataks, which are the tips of mountains sprouting through the ice cap at the heads of the glaciers. On our right as we go south will lie the smooth, monotonous sheet of the ice cap. When we reach the south (it is impossible to tell how near the point we shall get) we shall turn north up the highest part of the ice cap and follow the ridge until we get to the central ice-cap station opposite our base. We shall then turn out and drop down to the base.
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> The most important purpose of this journey will be to find out which is the highest part of the ice cap, to delineate, as it were, its profile.

But still further work is outlined for the expedition. With the coming of spring, six or eight dog sledges will begin a 1,800-mile trek northward over the great ice plateau. Also at this time of the year an airplane will fly from the base station westward to Godhavn.

United States' representative in the Greenland activity is again directed by Prof. W. H. Hobbs, of the University of Michigan. To Doctor Hobbs belongs the credit of having established the first aërological station to be in continuous operation for the study of the upper air in Greenland. His 1930 expedition, the fourth successive party sent into the field, has had its members sent to two different places along the west Greenland coast. William S. Carlson, A. B., and assistant Max Demorest, have set up a station at east Angtilagtok, near Upernivik, in latitude 73°, the site being only 14 miles from the west margin of the ice cap. The second station was established at Ivigtut, in latitude 51°, and is in charge of Evans Schmeling. Both Carlson and Schmeling became interested in the study of meteorology through their work at Mount Evans, the former base of Doctor Hobbs' expeditions. In addition to their work of making pilot-balloon ascensions and gathering meteorological data, these men will determine in their respective regions the exact position of the ice front. Near Upernivik, in particular Professor Tarr 30 years ago determined the frontal position of the Cornell Glacier, and Carlson's findings, therefore, should be exceedingly valuable.

Two other nations, namely, Norway and Rumania, will be represented if Dr. Th. Hesselberg, of the Norwegian Meteorological Institute, finds it possible to establish a station for the study of upper air on MacKenzie Bay, in latitude 73½°, and if Doctor Dambrov, of Bucharest, carries out the plans he has given for his east Greenland weather station. At this time it is not known whether some of the Danish-operated Greenland stations plan to send up pilot balloons.

Heretofore, Greenland meteorological records gathered by expeditions which chanced into the field have had only a limited value, for in a region as large as the eastern part of the United States east of the Mississippi only samples of the weather could be gotten, and a definite conclusion regarding the so-important general circulation was practically unobtainable. It is for this reason, then, that during the year 1930–31, through cooperation, the stations of the Norwegian, German, Rumanian, and British on the east coast, the remote interior ice-cap stations of the German and British, and the west-coast stations of the German, and of the University of Michigan, together with the Danish coastal stations, should yield a vast amount of valuable weather data. From these data ought to come new conclusions regarding the weather of Greenland and surrounding regions, information needed not only for the trans-Atlantic air lines, but for what is more significant, a correct analysis of the weather of the Northern Hemisphere.